DECLARATION AND POWER OF ATTORNEY - ORIGINAL APPLICATION	Attorney's Docket No. 201-1448

As a below named inventor, I hereby declare:
My residence, post office address and citizenship are as stated below next to my name;

I verily believe I am the original, first and sole inventor or an original, first and joint inventor of the subject matter that is claimed and for which a patent is sought on the invention entitled

STEERING LINKAGE BALL JOINT ASSEMBLY

the specification of which is attached hereto.

I have reviewed and understand the contents of the specification identified above, including the claims.

I acknowledge my duty to disclose information of which I am aware that is material to the examination of this application in accordance with Section I.56(a), Title 37 of the Code of Federal Regulations; and
as to application for patents or inventor's certificate on the invention filed in any country foreign to the United States of America, prior to this application by me or my legal representatives or assigns,

[ ] no such applications have been filed, or

[X] such applications have been filed as follows:

[ ] I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below

COUNTRY	APPLICATION NO.	DATE OF FILING (month, day, year)	DATE OF ISSUE (month, day, year)	PRIORITY CLAIMED UNDER 35 USC 119	☐ Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.
				YES	

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

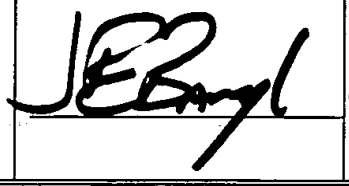
(Application Number)	(Filing Date)	(Status - patented, pending, abandoned)
(Application Number)	(Filing Date)	(Status - patented, pending, abandoned)

POWER OF ATTORNEY: - I/we hereby appoint Practitioners at Customer No. 022844, as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office and all foreign Patent Offices.

Address all correspondence and telephone calls to:

Gary A. Smith
Ford Global Technologies, Inc.
One Parklane Boulevard
600 East Parklane Towers
Dearborn, Michigan 48126 Telephone: (313) 323-0541

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

NAME AND MAILING ADDRESS OF INVENTOR:	RESIDENCE	CITIZENSHIP	SIGNATURE	DATE
Jackson E. Barry 22830 Beech Dearborn, MI 48124 US	Dearborn, MI 48124 US	U.S.A		8/7/02

Docket I.D.: 201-1448
S.N. 10/064,734

DECLARATION OF PRIOR INVENTORSHIP
UNDER 37 C.F.R. 1.131

I, Jackson E. Barry, hereby declare that I invented the subject matter of the claims of the present patent application (S.N. 10/064,734) as amended on March 18, 2004, prior to the publication date of US2003/0137120 A1 (Thompson et al.). I further declare that my conception of the invention took place in the United States.

As proof of my conception of the invention prior to the effective date of the Thomson et al. reference, I supply herewith the following documents:

Attachment A is copies of renderings produced from a CAD (Computer Aided Design) model of the 2005 Ford P131 truck steering system. I met with Mr. Gary Smith, Ford patent attorney, at a meeting on November 14, 2001, and briefed him on the new steering geometry to allow him to prepare a patent application. Although these pages are not dated, I declare that I printed these very pages on the day of that meeting and gave them to Mr. Smith. Page A1 of shows a steering knuckle arm having a dual-tapered through hole as is claimed in my patent application. This Attachment 2 gives dimensions of the steering system that, taken along with the drawings of Attachment describe the invention as

Attachment B is a copy of a document dated Oct. 22, 2001, that gives the final design dimensions of the steering system of the Ford P131 truck. The final P131

steering design in existence on that date included the precise geometry shown in the CAD renderings included as Attachment A.

Attachment C is a copy of two e-mails dated Sept. 17, 2001, and Sept. 19, 2001, that I authored and sent to my colleagues at Ford Motor Company. These show that the design of the steering system of the Ford P131 truck was finalized on or prior to Sept. 17, 2001.

Attachment D is a copy of a production drawing generated by a supplier to Ford Motor Co. at my direction. The drawing shows that knuckle (9) has upper and lower tapered surfaces, and that the stud comprises two portions (8,19) each of which has a conical shank portion engaging its respective tapered surface. The date in title block is Feb. 8, 2002, and the approval date is June 17, 2002. Both of these dates are prior to the publication date of the Thompson et al. reference.

3-18-04
(date)

Jackson E. Barry

AP1 Build

Cross Steer Geometry - Rev. 7.1 - 10/22/01

2005 Coil Mono (F450 / F550) - 7K

Left Wheel			pt #	Points	pt #	Right Wheel		
X	Y	Z				X	Y	Z
1539.81	-844.02	1279.67	6	Lower Ball Joint (Axis Point)	6	1539.38	844.02	1279.71
1564.07	-784.86	1556.93	7	Upper Ball Joint (Axis Point)	7	1564.36	784.86	1556.90
1362.00	-868.00	1393.07	12	Tie Rod @ Knuckle	12	1362.00	868.00	1393.07
			14	Tie Rod to Drag Link	14	1362.00	868.00	1477.07
1200.00	-299.17	1550.00	13	Drag link to Pitman Arm	13			
1376.45	-301.52	1625.90	15	Pittman Arm to Gear (Lower Axis	15			
1268.53	-301.52	1837.79	22	Upper Sector Shaft (Upper Axis Point)	22			
1200.00	-299.17	1625.00	13a	Ball Joint Articulation				
1362.00	-868.00	1468.07	12La	Ball Joint Articulation				
1258.68	-179.34	1531.02	20a	Ball Joint Articulation				
1554.17	-974.86	1443.79	9	Wheel Center	9	1554.17	974.86	1443.79
1554.17	-974.86	1062.79	10	Tire Patch	10	1554.17	974.86	1062.79
1554.17	-809.00	1443.79	11	Spindle Alignment Point	11	1554.17	809.00	1443.79
			19	Steering Damper to Frame	19	1383.69	363.63	1637.85
1213.77	-170.66	1593.96	20	Steering Damper to Drag Link	20			
1364.87	-450.84	1550.91	92	Track Bar @ Frame	92			
			94	Track Bar @ Axle	94	1463.11	486.01	1485.00
2548.80	-445.85	1439.00	1	Radius Arm @ Frame	1	2548.80	445.85	1439.00
1659.77	-445.85	1334.58	31	Radius Arm @ Axle - Front	31	1659.77	445.85	1334.58
1656.36	-445.85	1508.52	35	Radius Arm @ Axle - Rear	35	1656.36	445.85	1508.52

SLR		381		Left	Right
Wheel Base		4013.2	Scrub	84.564	84.546
Track Width		1949.72	Ackerman	51.23	52.47
pt 9 to pt 11	165.86	165.86	R Turn ∠°	37.755	46.063
pt 11 to pt 11		1618.00	L Turn ∠°	-46.062	-37.832
King Pin ∠°	-12.045	12.047	Dry Park	6.32	6.59
Caster ∠°	5.000	5.150	SEPH - Right	-6.19	-6.69
Camber ∠°	0.000	0.000			

-----Original Message-----
From: Barry, Jack (J.E.)
Sent: Monday, September 17, 2001 5:22 PM
To: 'John A Thompson'; Adham El-Haw; Norb Giczewski
Cc: Hess, Harry (H.F.); Stanley, John (J.W.); 'Darren.Fugett@dana.com'
Subject: RE: P131 Linkage/ Trackbar AP1 builds

Attachment C

Thanks for the update on the timing requirements.

I believe we need these to be forgings to allow these trucks to run durability. I would be all set with releasing the geometry, but the king pin axis has changed slightly to allow a 0.15 deg caster split. This will result in a minor tweek to the steering geometry (the only point I see changing is the pitman arm to drag link which will change by approx 0.2 mm).

I think the geometry and CAD layout we are working with now is what we will build to, with the minor exception noted above. After discussing clearances this morning, I believe we should not proceed with the tubular tie rod for the AP1 build. I would like to continue working on that for the obvious weight savings, but we need to improve the package clearances and we don't have anymore time left for AP1. If we can figure something out on that, it may make sense to bring it in as a retrofit part.

We will nail the final geometry down and support the 9/19 design freeze. Thanks.

Jack Barry

P254 Chassis Steering
Phone ☎: 31-72327
Fax 🖷: 39-00880
***Address:* PDC 1TK09**

-----Original Message-----
From: John A Thompson [mailto:John.A.Thompson@trw.com]
Sent: Monday, September 17, 2001 2:09 PM
To: jbarry@ford.com
Cc: Adham El-Haw; Norb Giczewski
Subject: P131 Linkage/ Trackbar AP1 builds

Hello Jack,
I have put together a preliminary timing plan for the AP1 prototype builds, using the assumptions that MRD is February 4th 2002, and that parts required will come from forged tooling. Traditionally forge tooling is the long lead time , and this becomes the critical path on my chart.It is my understanding that the vehicle geometry has not yet been finalized, my preliminary chart indicates that **we (TRW) need to have finalized design confirmation from Ford by 9/19/01,** in order to meet the MRD detailed above, with the forged components.
Jack could you please let me know what the chances are of finalizing the design by the 19th, if the MRD of 2/4/02 is still valid, and if forgings are a pre requisite for this build.? We have the option of substituting forgings with cut from solid (we may have to do this on the pitman regardless), we then trade tooling costs and time for machine costs.
Regards
John

John A Thompson
Staff Engineer
Advanced Engineering Applications
TRW Chassis Systems
E Mail : john.a.thompson@trw.com
Tel :905-641-7420
Fax : 905-641-7265

From: Barry, Jack (J.E.)
Sent: Wednesday, March 17, 2004 2:02 PM
To: Smith, Gary (G.A.)
Subject: FW: P131 Linkage/ Trackbar AP1 builds

Follow Up Flag: No Response Necessary
Flag Status: Flagged

Ref point chart.

Jack Barry

Truck Chassis Steering
Phone ☎: 31-72327
Fax 🖷: 31-72327
***Address:* PDC 1BB17**

-----Original Message-----
From: Barry, Jack (J.E.)
Sent: Wednesday, September 19, 2001 5:11 PM
To: 'John A Thompson'; 'Adham El-Haw'; 'Norb Giczewski'
Cc: Hess, Harry (H.F.); Stanley, John (J.W.); 'Darren.Fugett@dana.com'; Longworth, Paul (P.R.); Parks, James (J.); Miller, Daniel (D.)
Subject: RE: P131 Linkage/ Trackbar AP1 builds

We are frozen now! Please kick everything off for AP1.

The attached file shows the points and geometry we should be using for AP1. I had to tweek a couple of points, so please compare everything closely to what you are carrying and update to these coordinates.

The damper is packaged and we will have to use a ball stud attachment to the drag link. We found the articulation angles exceeded what a bushing can contain. I show the damper coordinates in the attached file as points 19 and 20. The ball stud is located at point 20 and it's orientation is defined by 20a. We will need to provide an attachment pad for this stud in the drag link. I have a meeting set up for next Friday to work through the interface details between the damper and the drag link, but this should be the geometry we will end up with.

John will post the CAD data in the morning.

Adham - please repost this CAD data into Metaphase with your final designs under the part numbers:

5C34-3304-B0	Drag Link
5C34-3289-B0	Tie Rod
5C34-3590-B0	Pitman Arm
5C34-3B239-A0	Track Bar

Please try to repost this as quickly as possible. I know Darren is in real need of this design detail to finalize his knuckle designs and get the FEA going.

Thanks for all your hard work - I think a victory party may soon be in order .....

Jack Barry

P254 Chassis Steering
Phone ☎: 31-72327
Fax 🖷: 39-00880
***Address:* PDC 1TK09**

Attachment D

ITEM	DESCRIPTION
1	DRAG LINK MACHINING - OUTER
2	CAP - DUAL SEAT
3	SPRING
4	GREASE FITTING
5	BEARING - NYLON
6	BEARING - METAL
7	SEAL - BOOT
8	STUD - DRAG LINK OUTER
9	KNUCKLE (OUTSIDE SUPPLIER)
10	WASHER - STUD EXTENSION TIE ROD END (RIGHT HAND)
11	SEAL - BOOT
12	BEARING - METAL
13	BEARING - METAL
14	SEAL - RIGHT HAND TIE ROD END - OVER SPIN
15	CAP - W/ THROUGH HOLE (WASHER TYPE)
16	SPRING
17	COTTER PIN (ASSEMBLED BY FORD)
18	CASTLE NUT (FLANGED) (ASSEMBLED BY FORD)
19	STUD - W/ THROUGH HOLE
20	TIE ROD END MACHINING - RIGHT HAND OUTER
21	GREASE FITTING (NOT SHOWN - ATTACHED TO #20)
22	GREASE (USED IN BOTH SOCKETS)

REV.	CHANGE DESCRIPTION	DATE	BY
A	UPDATED TO LATEST DESIGN		BZ

POWERS & SONS
DIVISION OF LETTS INDUSTRIES, INC.
1613 MAGDA DRIVE
MONTPELIER, OHIO 43543

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994	DO NOT SCALE DRAWING	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS

MACHINED	STAMPED	PLASTIC	FORGED	
- LINEAR ±0.25 - ANGULAR ±0.50°	- LINEAR ±0.50 - ANGULAR ±0.50°	- LINEAR ±0.13 - ANGULAR ±0.50°	- LINEAR ±0.75 - ANGULAR ±2.00°	COINED ±0.50

DATE	DRAWN	MFG. ENG./ DATE	DESIGN ENG./ DATE
2-8-02	SFR		

TITLE	MATERIAL
STR ASSY PURPOSED RIGHT KNUCKLE CONNECTION P131 2005 F250/F350 4X4 VEHICLES	N/A

CUSTOMER PART NUMBER	POWERS & SONS NUMBER
N/A	14530010